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UNITED STATES GOVERNMENT
MEMORANDUM

To: William F. Caton
Acting Secretary

From: David H.Krech DHK
Wireless Telecommunications Bureau

Date: June 18, 1996

Subject: Record in WT Docket 96-6 -- Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services

Please place the two attached documents in the public record for WT Docket 96-6 -- Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services. The first document is the handout distributed by Michael B. Hayes, Director of Wireless Marketing, Northern Telecom, at a presentation to the Wireless Bureau on Fixed Wireless Access on May 14, 1996. The second document is the remarks of Commissioner Susan Ness at the FCBA/Warren Publishing Wireless Communications Summit on June 10, 1996 -- "Spectrum Management Principles for the Twenty-First Century."

Attachments

"Spectrum Management Principles for the Twenty-First Century"

Remarks of
Commissioner Susan Ness
Federal Communications Commission
at the
FCBA/Warren Publishing
Wireless Communications Summit
Washington, D.C.

June 10, 1996

It is a pleasure to be with you this morning.

It's hard to believe that two years have passed since I joined the Commission. As some of you may recall, during my first few weeks, I spent 140% of my time on the final orders which launched 140 MHz of spectrum for personal communications services. We are now two years and $20 billion into my five year term of office.

Here we are together again at the "Wireless Communications Summit."

That is a rather *lofty* title for a Monday morning. It conjures up images of world leaders coming together to resolve issues of war and peace and to play golf.

Wireless Summit also evokes images of standing atop a mountain peak. Seeing the world from a splendid vantage point. Overlooking everything. And there in front of this magnificent view -- glistening in the sun -- a wireless tower

I.

I'd like to spend our time together exploring a different topic -- the subject of the following riddle: It cannot be seen by the human eye, but always surrounds us. It is constantly used, but never consumed. It is our most valuable and renewable resource. What is it?

The radio spectrum, of course.

Spectrum is the common denominator of all wireless services. It brings us a world of news, information and entertainment; enables us to communicate with folks on earth while flying 32,000 feet above the ground, and with satellites perched 23,000 miles in outerspace. It opens garage doors, monitors our infants, provides rapid dispatch of fire and police vehicles, and allows us to stay in touch with our offices and our homes by phone and page. It permits efficient monitoring along thousands of miles of pipelines and railroad tracks. It connects computers with each other and with the Internet.

Today, as in the past, the demand for useable spectrum greatly exceeds the supply.

The FCC is the steward for commercial use of the radio spectrum. We must conduct spectrum policy in a manner that maximizes flexibility, efficiency, and the public interest. It is possible to have flexibility without efficiency; efficiency without flexibility; and both without serving the public interest.

By our action or our inaction, we can further or frustrate rapid development and deployment of innovative technologies and services. Thus, spectrum management is perhaps the most important of the Commission's many responsibilities.

In the past, few understood the inherent value of the radio spectrum. That is not so today. Six auctions and $20 billion later, our elected officials at both ends of Pennsylvania Avenue have added the proceeds of spectrum auctions to their budget calculations.

During the past year, both the Senate and the House have held multiple days of hearings on spectrum policy. Following those sessions, Chairman Pressler circulated draft legislation on spectrum reform.

Last March, the Commission met *en banc,* in a day-long "spectrum summit." We heard testimony from a broad array of witnesses on the FCC's spectrum management policies. The session was focused not on individual proceedings, but on spectrum principles appropriate for a rapidly changing technological world.

II.

I would like now to share with you some of my preliminary thoughts on spectrum management. They are embodied in eight principles.

Principle Number One: The spectrum belongs to the public.

The FCC licenses the *use* of the spectrum for a renewable term of years, but the spectrum remains a national asset. Some argue that existing and future licensees should be awarded spectrum in *fee simple*. That would be *fee simplistic*. Spectrum is one of our most valuable and scarce resources. It must not be allowed to be warehoused or wasted.

Also, as I will discuss in a moment, the public interest is best served if government has the power to review usage and to reallocate spectrum, if necessary, to increase efficiency or introduce new, innovative services. One cannot leave that task entirely to the marketplace.

Finally, spectrum is our prime communications link. It should not be controlled by a few -- a bottleneck that can silence other voices.

Because spectrum is a national resource, the public must be compensated for its use. Auctions are one source of payment. Meaningful public interest obligations and user fees are two other ways of paying for use of this public good.

Principle Number Two: We must review and reallocate spectrum expeditiously.

Remember the old television sets -- the ones that went from channel 2 all the way through channel 83? Now, sets only tune up to channel 69. That is because in the 1960's, the Commission reviewed spectrum use and decided to reallocate television channels 70 through 83 from television broadcasting to mobile services.

This is how the cellular, SMR, and passenger airplane telephone industries obtained their original mobile spectrum, as did police, fire, and other public safety officials.

As an aside, that is why some people reported hearing telephone conversations on their TV sets. They weren't crazy -- some analog calls are perfectly audible on older TV sets, especially if located near a cell site.

As the popularity of cellular telephony grew, providers asked for more spectrum to accommodate new customers. But most of the spectrum in the adjacent band had been allocated, so the Commission suggested that companies increase capacity through digital technology.

Demand for mobile services continued to grow. In 1990 the FCC again conducted a study of spectrum usage and needs, and as most of you know, this time we reallocated for PCS 140 megahertz occupied by fixed microwave operators.

Had the Commission not been authorized to review and reallocate spectrum, it might have been difficult to get PCS and cellular off the ground. This was important -- not just to provide for common equipment and widespread deployment -- but also to create significant worldwide export opportunities for our cellular and paging industries.

However, the Commission has not always responded as rapidly as we should to accommodate advances in technology. We must move expeditiously if we are to stay in the forefront in the development of new technologies and services.

Principle Number Three: We must promote efficient use of both licensed and unlicensed spectrum.

Spectrum is finite, but its capacity may be infinite.

There are two ways to increase capacity: (1) allocate new spectrum or (2) make more efficient use of existing spectrum. The trade-off is between using additional spectrum that could support other services and the cost of developing and deploying the new, more efficient technology. Both options must be weighed

When no more cellular spectrum was available, the industry developed a more efficient analog transmission system, and even more efficient digital technologies. Today, I am told that a fully digital CDMA system has ten times the capacity of the original AMPS system. This is pretty dramatic, given that many of the original cellular systems were completing initial construction just a decade ago.

At our spectrum *en banc*, licensees operating in the 220 MHz band demonstrated products that transmitted voice and data in extraordinarily efficient 5 KHz channels. That is five times more efficient than typical FM systems. When efficiency was emphasized, licensees were able to develop a commercially viable technology to fill the need

The Commission must also promote spectrum efficiency in the unlicensed bands. There, parties must share spectrum with a wide assortment of other unlicensed services, frequently adapting their technologies to avoid interference. But the cost/efficiency tradeoff becomes more problematic with low cost, high volume unlicensed consumer products. Addressing this issue, unlicensed PCS providers voluntarily developed an etiquette that avoids interference and improves spectrum efficiency. The FCC then adopted those rules.

Principle Number Four: We must give licensees greater flexibility to respond to marketplace needs.

The mantra for licensing spectrum today is flexibility. In some respects the distinction between allocation and service rules has become blurred.

At the Commission's spectrum hearing, the issue was raised whether the FCC's traditional spectrum *allocation* process remains appropriate given the accelerating pace of technological change and innovation. Some witnesses proposed auctioning off chunks of spectrum in fee simple and letting private parties determine its best future use, subject to basic interference rights and consistent with international treaties

Other participants supported flexibility in permitted *uses* of spectrum. They recognized a need for the Commission to specifically allocate spectrum for broad categories of services. Many praised the Commission's service rules governing PCS as an example of heightened flexibility.

I believe that we should provide greater service flexibility, particularly for emerging technologies. Generally, licensees should not need Commission approval to adjust their services to meet market demand where there is no interference. The PCS rules represent a good model.

Allowing greater flexibility will enable the licensee to respond rapidly to market conditions But where the value of the service depends on a critical mass of providers using the same equipment, unbridled flexibility could lead to inefficient spectrum use and a reduction in the public good.

John Stupka of SBC Communications offered an intriguing "national investment--free market extension paradigm" to determine the appropriate degree of service rule flexibility. He argued that where there is a major new service worthy of national investment, more stringent rules should apply to help launch the offering. In contrast, where the service is merely a free-market extension of the original service (such as from cellular mobile telephone to PCS) then let the "free marketplace work its magic."

He warns that failure to apply the model of investment vs. extension may freeze both the introduction of new services and the extension of existing ones.

Principle Number Five: We must generally avoid mandating standards.

Let's apply the Stupka paradigm to standard setting. The free market will work better if the FCC avoids setting standards where the technology is an extension of an established service. (Cellular and PCS). The Commission's adoption of the AMPS standard spearheaded its worldwide acceptance. Since PCS is a market-based extension of mobile phone service, the FCC should resist the call to mandate a specific digital PCS standard. The marketplace should resolve the debate between competing technologies.

This is the right decision; but the FCC may wish to adopt several non-exclusive standards to promote sales of technology abroad.

For emerging technologies we have chosen to propose only the minimal technical standards necessary to avoid interference to other users, and a minimal spectrum-sharing etiquette to promote spectrum efficiency. Our recent SuperNet/GII Notice of Proposed Rulemaking illustrates this proposition.

Unlike cellular and other subscriber-based services, free over-the-air broadcast services require a transmission standard if equipment is to be widely available at low prices. The standard also ensures that all Americans can have access to a full array of over-the-air broadcast programming. Consumers need to know that a TV set bought in Richmond will also work in Rochester and in Redwood City.

Once the digital television standard has had an opportunity to succeed, the FCC should

consider relaxing its rules to permit other transmission systems which do not cause interference.

I do not advocate adopting a single standard for other over-the-air video distribution services, such as DBS, wireless cable, and LMDS. The broadcast service is unique in its reach and provides a platform for free video distribution to all Americans.

Principle Number Six: Licenses must be issued expeditiously.

The Commission is streamlining its licensing processes. First, we have used auctions as a means of assigning licenses to those who value them the most. Auctions have hastened the pace of selecting licensees and commencing service

To further speed up our licensing, the Wireless Bureau has instituted electronic filing. This can take weeks off license and renewal response times License modifications can also be made "on line."

Our licensing databases also are being placed on the Internet, so that the public can examine them and judge for itself whether there may be room for another licensee in a particular area.

And we have relied upon the private sector whenever possible to perform many ministerial tasks.

For FM and TV broadcast licensing -- where we do not have auction authority and the bands are already crowded -- I wonder whether sequential proceedings for allotments and assignments truly serve the public interest. Instead, it might make sense to combine the procedures and cut in half the time it takes between the request for a channel and commencement of service.

Principle Number Seven: Not all spectrum or services were created equal.
(Corollary: some spectrum and services are more equal than others).

In this chaotic world, it is tempting to believe that all spectrum is created equal. But not even a Wireless Summit can by edict eliminate the laws of physics. The higher the frequency, the shorter the wavelength and the shorter the distance the signal is carried. Mobility is best achieved in bands 2 GHz and below.

It stands to reason that there is greater efficiency -- and more service to the public -- if spectrum use bears some relationship to the propagation characteristics of the spectrum. Also, some bands are pretty crowded already. Sharing and overlays are possible in some bands and unlikely in others.

I am an avid proponent of spectrum auctions. Auctions should be our primary method for

selecting licensees. However, there are times when I believe the public is better served by not auctioning licenses.

For example, the Commission has set aside bandwidth for unlicensed services. These are bands where entrepreneurs battle it out, tinkering with their systems to accommodate sharing with other users. Services such as cordless telephones, remote home and auto security devices, and wireless access to the Internet are just a few examples of unlicensed spectrum uses.

Public safety and amateur radio are two other areas where auctioning may not serve the public interest.

Finally, although we have focused on auctioning commercial services, there are important private uses for spectrum, such as parcel delivery tracking systems. But, as I stated in Principle Number One, the public should be compensated for the use of this spectrum -- perhaps by assessing an annual fee on private licensees.

Principle Number Eight: We must coordinate internally to lead externally.

My last principle. The United States has a strong international leadership role to play. But it can succeed only if it has sufficient lead time and only if its international advocacy is consistent with domestic policy. We must not fight for allocations abroad which cannot be honored at home.

We are taking steps to improve our internal coordination and to accelerate decision-making on U.S. proposals. Billions of dollars for U.S. industry hangs in the balance.

III.

As I noted in my eight principles for management of the radio spectrum, the goal of the FCC should be to maximize flexibility, efficiency, and the public interest. Spectrum belongs to the public. We must review, reallocate, and license spectrum expeditiously. Licensees need flexibility to respond to market needs. We generally should avoid mandating standards. Not all spectrum or services are created equal. There is a need for unlicensed uses and other public services. And finally, we must improve internal coordination and accelerate decision-making to provide global spectrum leadership.

At this Wireless Summit, we have discussed how our Nation can best manage its radio spectrum. Over time, we will learn whether we at the FCC have climbed the right mountain to reach that Summit.

Thank you.